



AMENDMENTS

A. IN THE CLAIMS:

Please cancel claims 1, 5, 9-11, 15-17, 21, 25, 27-32, 42, 49, 74-77, 82-84, 88 and 89 without prejudice.

Please enter the following rewritten claims:

D¹ 22. (Amended) The construct of claim 90, wherein the reporter gene encodes a fluorescent protein.

D² 26. (Amended) The plasmid of claim 91 that is an expression vector.

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Please enter the following new claims 90-92:

Rule 1.126
Sub 3
93
90. (New) A construct comprising an isolated nucleic acid molecule operatively linked to a reporter gene, wherein the nucleic acid molecule comprises a sequence of nucleotides selected from the group consisting of:

a) a sequence of nucleotides that encodes a *Caenorhabditis* LOV-1 protein and that encodes the sequence of amino acids encoded by the complement of the sequence of nucleotides set forth in SEQ ID No. 3;

b) a sequence of nucleotides that is the complement of a sequence of nucleotides set forth in SEQ ID No. 3 and that encodes a *Caenorhabditis* LOV-1 protein, or complement thereof;

c) a sequence of nucleotides that encodes a *Caenorhabditis* LOV-1 gene and that hybridizes along its full length to the full length of at least one of the exons set forth in SEQ ID No. 3 under conditions of at least moderate stringency, and that is present in the genome of a *Caenorhabditis* nematode, wherein a *Caenorhabditis elegans* expressing the LOV-1 protein exhibits normal location of vulva and response male nematode sensory behaviors; and

d) a sequence of nucleotides degenerate with the sequence of nucleotides of c).

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91. (New) A plasmid comprising an isolated nucleic acid molecule comprising a sequence of nucleotides selected from the group consisting of:

a) a sequence of nucleotides that encodes a *Caenorhabditis* LOV-1 protein and that encodes the sequence of amino acids encoded by the complement of the sequence of nucleotides set forth in SEQ ID No. 3;

b) a sequence of nucleotides that is the complement of a sequence of nucleotides set forth in SEQ ID No. 3 and that encodes a *Caenorhabditis* LOV-1 protein, or complement thereof;

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c) a sequence of nucleotides that encodes a *Caenorhabditis* LOV-1 gene and that hybridizes along its full length to the full length of at least one of the exons set forth in SEQ ID No. 3 under conditions of at least moderate stringency, and that is present in the genome of a *Caenorhabditis* nematode, wherein a *Caenorhabditis elegans* expressing the LOV-1 protein exhibits normal location of vulva and response male nematode sensory behaviors; and

d) a sequence of nucleotides degenerate with the sequence of nucleotides of c).

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92. (New) An isolated nucleic acid molecule that encodes a mutant *Caenorhabditis* LOV-1 protein comprising a sequence of nucleotides that encodes the sequence of amino acids set forth in SEQ ID NO. 15, wherein:

a *Caenorhabditis elegans* nematode expressing the mutant protein exhibits defective mating behavior;

a nematode that expresses such defect exhibits one or both of an altered location of vulva (Lov) and response phenotype; and

a wild-type LOV-1 protein is encoded by the nucleic acid molecule consisting of:

a) a sequence of nucleotides that encodes a *Caenorhabditis* LOV-1 protein and that encodes the sequence of amino acids encoded by the complement of the sequence of nucleotides set forth in SEQ ID No. 3;

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b) a sequence of nucleotides that is the complement of a sequence of nucleotides set forth in SEQ ID No. 3 and that encodes a *Caenorhabditis* LOV-1 protein, or complement thereof;

103 c) a sequence of nucleotides that encodes a *Caenorhabditis* LOV-1 gene and that hybridizes along its full length to the full length of at least one of the exons set forth in SEQ ID No. 3 under conditions of at least moderate stringency, and that is present in the genome of a *Caenorhabditis* nematode, wherein a *Caenorhabditis elegans* expressing the LOV-1 protein exhibits normal location of vulva and response male nematode sensory behaviors; and

d) a sequence of nucleotides degenerate with the sequence of nucleotides of c).